



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/464,830	12/17/1999	KARL J. MOLNAR	8194-350	8144

20792 7590 12/01/2003

MYERS BIGEL SIBLEY & SAJOVEC
PO BOX 37428
RALEIGH, NC 27627

EXAMINER

AHN, SAM K

ART UNIT	PAPER NUMBER
----------	--------------

2634

DATE MAILED: 12/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/464,830

Applicant(s)

MOLNAR, KARL J.

Examiner

Sam K Ahn

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on req. for reconsideration, 09/26/03.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-18 and 25-36 is/are allowed.
- 6) ☒ Claim(s) 1,3,19 and 21 is/are rejected.
- 7) ☒ Claim(s) 2,4-6,20 and 22-24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed on 09/26/03 have been fully considered but they are not persuasive. Explanation in regards to applicant's argument with joint demodulation is below. Applicants argue that Cui's SA-CCIC (Single Antenna-Co-channel Interference Cancellation) is not a joint demodulator. Applicants explain the definition of a joint demodulator, in page 2, lines 20-29. As the teaching of Cui's SA-CCIC is explained to be equivalent to the joint demodulator, in previous office action, dated 8/13/03, in paragraph 2 of page 2, the office further explains that the definition of the joint demodulator is being taught by Cui. (note col.4, lines 1-26) Reading throughout the teaching of Cui, one skilled in the art would understand that Cui's teaching does teach that SA-CCIC considers the received signal comprising a desired signal and interfering signal and obtaining better estimate of the desired signal. Cui discloses detailed teaching of SA-CCIC in figure 5. The received signal, $R(n)$ including interfering signals enter the SA-CCIC. (120 in Fig.5) The outputs of decision device (512) are S_i and S_d , interfering signal and desired signal, respectively. (note col.7, line 45 – col.9, line 55) These outputs are fed-back to determine a better estimation of a desired signal. (note col.9, line 56 – col.14, line 6) Therefore, as indicated in previous office action that Cui teaches a joint demodulator, which is a more complex demodulator, Cui further teaches the limitation of a joint demodulator explained by the applicants, which was also explained in the previous office action of having equal function of the joint demodulator. As with the consideration of joint demodulator explained above, the rejection is as below.

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 3, 19 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Cui ('518).

Regarding claims 1 and 19, Cui discloses a method and apparatus of a receiver comprising SA-CCIC (Single Antenna – Co-channel Interference Cancellation) demodulator and a conventional demodulator. Cui discloses detailed teaching of SA-CCIC in figure 5. The received signal, R(n) including interfering signals enter the SA-CCIC. (120 in Fig.5) The outputs of decision device (512) are Si and Sd, interfering signal and desired signal, respectively. (note col.7, line 45 – col.9, line 55) These outputs are fed-back to determine a better estimation of a desired signal. (note col.9, line 56 – col.14, line 6) Cui further teaches SINR detector that measures signal to interference and noise ratio. Cui teaches demodulating the signal when a relationship between the signal and the noise and the interference meets a criterion, and jointly demodulating the signal when a relationship between the signal and the noise and the interference does not meet a criterion. (note col.14, lines 7-18) Joint demodulation can be defined, as stated in the specification (note 26th line on page 1 – 4th line on page 2) as a demodulator comprising more complex operation than a conventional demodulator, and detecting desired signal

from a received signal that includes an interfering signal. Cui teaches SA-CCIC demodulator with equal function as of the joint demodulator.

Regarding claims 3 and 21, Cui teaches all subject matter as applied to claims 1 and 19. In demodulating the signal received, Cui further teaches a threshold SINR value of 6 dB to determine whether conventional demodulation or SA-CCIC demodulation is used. (note col.14, lines 7-18) When SINR value is greater than 6 dB, conventional demodulation is used, while SA-CCIC demodulation is used when less.

Allowable Subject Matter

3. Claims 2, 4-6, 20 and 22-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
4. Claims 7-18 and 25-36 are allowable.

The following is a statement of reasons for the indication of allowable subject matter: Prior art does not teach a method of detecting a desired signal including a desired signal synchronization sequence from a received signal that includes an interfering signal having an interfering signal synchronization sequence comprising detecting method of synchronizing the received signal, generating a first desired signal, an estimate of an interference to noise ratio of the received signal and an identification of the interfering signal synchronization

Art Unit: 2634

sequence from the synchronized received signal, generating an estimate of a carrier to interference and noise ratio of the received signal, jointly demodulating the received signal in response to the identification of the interfering signal synchronization sequence, to generate a second desired signal based upon the estimate of the carrier to interference and noise ratio of the received signal and the estimate of the interference to noise ratio of the received signal.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Sam Ahn** whose telephone number is **(703) 305-0754**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Stephen Chin**, can be reached at **(703) 305-4714**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

P.O. Box 1450

Alexandria, VA 22313-1450

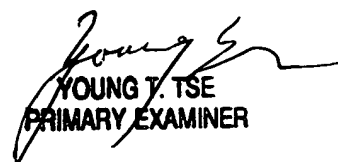
or faxed to:

(703) 872-9306

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Sam K. Ahn
10/5/03


YOUNG T. TSE
PRIMARY EXAMINER